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SHOWDOWN---FOR WATER

Federal Water Pollution Control Administration
Washington, D. C.

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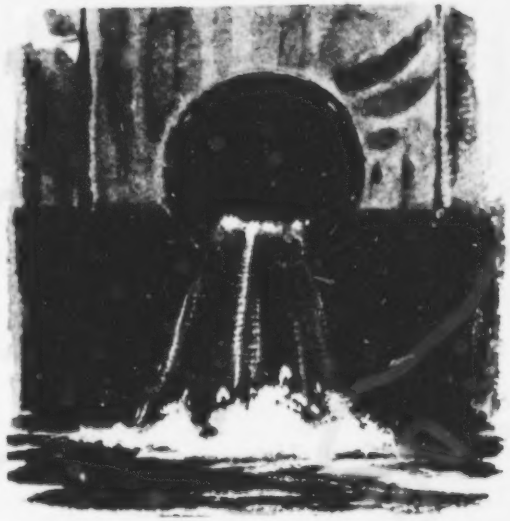
A publication prepared by the Office of Public Information, Federal Water Pollution Control Administration.

...for water



The Cover
A green swath of algae, the cancer of water pollution, rims the rocky beach of a dying lake. Pollution spurs wild growth of these often obnoxious and malodorous tiny green plants.

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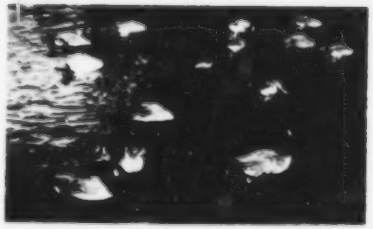


UNSAFE
FOR
SWIMMING
HOCK DEPT OF HEALTH

foreword

FOR YEARS, America has been heading for a water quality crisis. In many localities, the crisis is already here. Lake after lake is sick or in danger. River after river has been turned into an open sewer for municipal, industrial, and agricultural wastes. Beach after beach has had to be closed to swimming and fishing. Finding enough clean water for year-around municipal supply is touch-and-go in a number of areas. Many underground water resources are in jeopardy.

The ugly name of the problem is pollution. The ugly fact of pollution takes many forms. It may take the form of offensive odors and offensive sights—of rotting algae and rotting fish, of floating debris and dirty boat hulls. Or it may take more stealthy forms—of water that looks all right at a distance but water that is dead, devoid of oxygen, devoid of all living things—an aquatic wasteland.

Continued pollution, regardless of the source, means less and less water of suitable quality for necessary as well as desirable purposes. At the same time,

continued growth of population and industry means an ever-mounting demand for clean water, usable water. It is when the lines of supply and demand cross—when demand begins to exceed supply—it is then that the crisis begins.

Decade by decade, year by year, man-made pollution has pressed down on our lakes, streams, bays, and estuaries. This trend can be reversed. The crisis *can be* averted.

However, the job cannot be handled by any one group or organization alone. Everyone has a stake in clean water. It is a responsibility that must be shared by all segments of society—by government at all levels, by industry, by individual citizens in all walks of life.

In the past several years, the Federal Government has substantially increased and improved its ability to support water pollution control activity. State and local governments have also accelerated their water cleanup efforts, and industry too is meeting the challenge in many ways.

Citizen support and cooperation are being marshalled by civic, conservation, and women's groups everywhere in the country. The press and other news and information media are covering the water pollution crisis as never before and are calling for action to deal with it. Many major public information campaigns on pollution are underway, and more are certain to be launched.

One central fact is beginning to emerge from all this—*there is no way to avoid the costs of pollution*. Either we must put up with the more and more costly consequences of pollution, or we must accept the costs of pollution prevention and control. That is the stark either-or of the situation. There is no other choice.

The following pages tell in brief what the Federal Government is doing and trying to do about one of the great environmental problems of modern times—the tightening grip of pollution on the Nation's priceless water resources.

The showdown for water has begun.

STEWART L. UDALL, Secretary of the Interior ● MAX N. EDWARDS, Assistant Secretary for Water Pollution Control ● JOE G. MOORE JR. Commissioner, Federal Water Pollution Control Administration

the program for water pollution control

THE FEDERAL water pollution control program began on a small scale in 1948. It has been strengthened and expanded many times since.

Today, the program is combating water pollution on a large scale and on a number of broad fronts.

Under its major continuing programs, the Department of the Interior's Federal Water Pollution Control Administration:

Makes grants for the construction of municipal waste treatment facilities.

Works with States in the administration of water quality standards.

Administers a far-reaching Federal enforcement campaign against pollution of interstate or navigable waters which endangers health or welfare.

Supports research and development looking toward better means of controlling all forms of water pollution, with particular emphasis on finding improved ways to help municipalities and industry do the job.

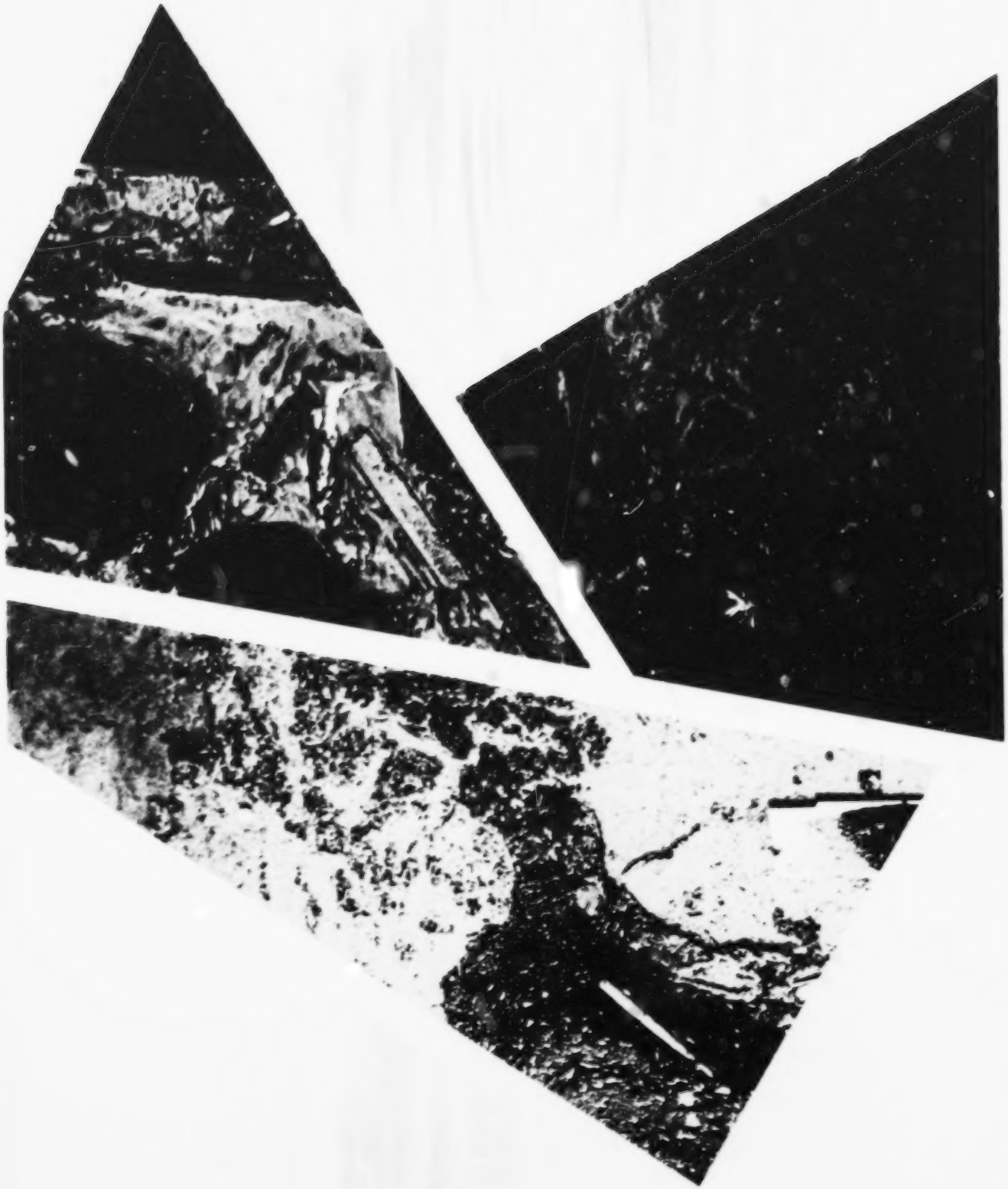
Provides expert technical assistance on difficult pollution problems, and supports and encourages the training of much needed manpower for all aspects of water pollution control.

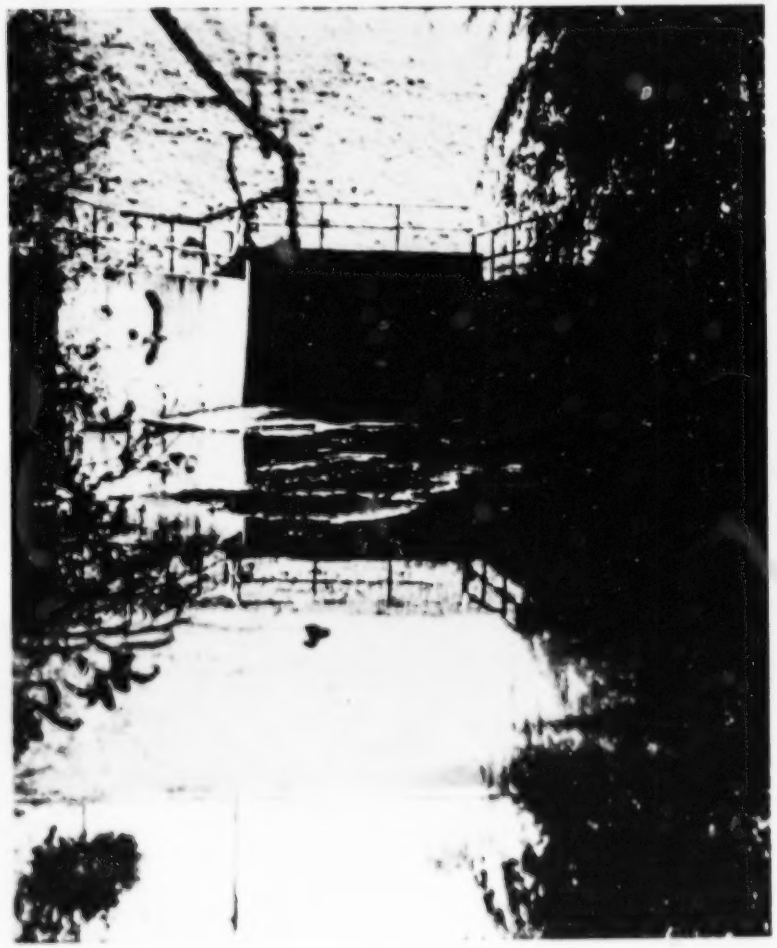
Encourages effective river basin planning that takes into account all factors affecting water quality.

Extends financial and other assistance to States to help them strengthen their own water pollution control programs.

Along with these key program elements, the Federal Water Pollution Control Administration is conducting a number of economic studies and other special projects which will provide new and more complete information to help meet long-term goals.

Emerging as critical areas in the total Federal water pollution control program are the Nation's lakes and estuaries. Programs are being developed to find more effective ways to halt the accelerated and unnatural eutrophication or aging of the lakes and to restore and preserve the quality of the estuaries.





MUNICIPAL WASTES, discharged untreated or inadequately treated, are a major source of water pollution. Growing city populations and the soaring volume of industrial discharges into municipal sewers have placed a steadily mounting load of such wastes on waters across the country. Communities are not building or expanding sewage treatment facilities fast enough to keep up with the needs of more people, more housing, and the obsolescence of previously constructed facilities.

National attention was focused on this problem in 1956 when Congress passed the first permanent Federal Water Pollution Control Act. This act initiated the program of Federal grants to municipalities to assist them in improving or building sewage treatment works. Amendments since then have helped to step up construction activity by making more money available and on a more liberal basis.

The Federal construction grants program is not intended to be a substitute for State and local activity. Rather, the purpose of this assistance is to encourage and support such activity. The financial incentives—and the benefits—are sizable.

A community can get financial help in the construction of a municipal waste treatment works with a Federal grant of

at least 30 percent of the construction cost. And under certain conditions, the Federal share may be as much as 55 percent.

Although designed basically to aid municipalities, this program has a side effect which benefits industry. It paves the way for industry to join with municipalities in cooperative projects to build plants for treating both municipal and industrial wastes. This adds up to economies for both.

The construction grants program has accomplished much since its beginning in 1957. In the first decade of the program, the Federal Government supported the construction and expansion of more than 8,000 treatment facilities costing a total of $4.5 billion. Of this sum, more than $1 billion was in Federal funds.

Past progress, while impressive, has not kept pace with the needs. Untreated or inadequately treated municipal wastes still pour into rivers and streams in large quantities. To deal with this situation, municipalities will have to build waste treatment works on a vaster scale than ever before. The total bill for this waste-reducing program will run very high, but the costs of continued pollution would ultimately be much higher.

THE KEYSTONE of America's massive clean water program is the provision of the Water Quality Act of 1965 which called for all States to establish water quality standards for their interstate and coastal waters. This provision required States to make some crucial decisions involving the uses of their water resources, the quality of water to support these uses, and specific plans for achieving such levels of quality.

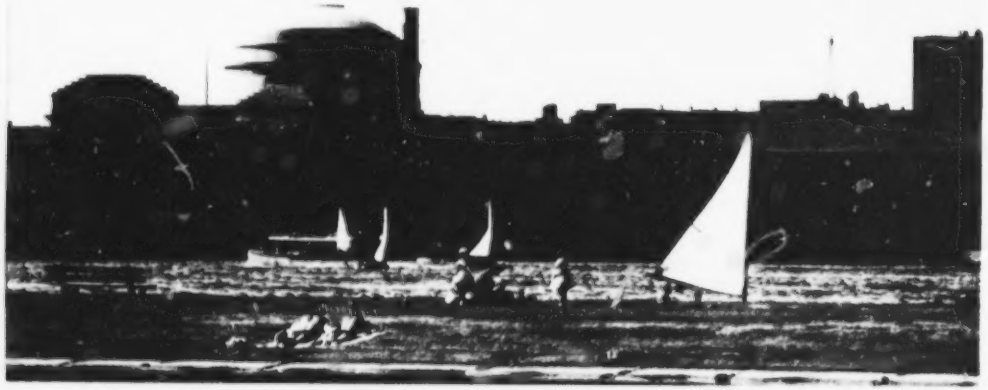
This program is a giant step forward. Its purpose is to enhance the quality and value of polluted water and to protect the quality of clean water. The standards are, in effect, the blueprints for the clean water program — a guide to planning, waste treatment works construction, research, enforcement, training, technical assistance, and pollution surveillance.

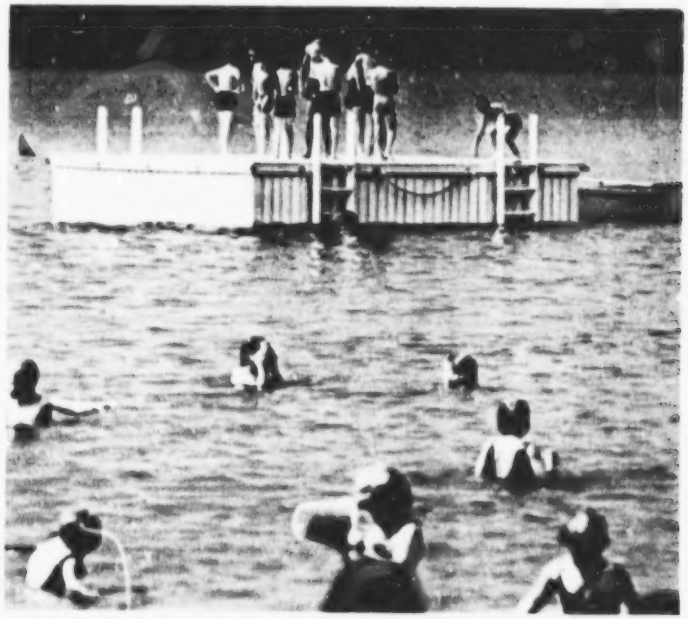
Wastes affecting the quality of water come from a number of sources—mainly municipal, industrial, and agricultural. Municipal sewage includes virtually everything that goes down the drain of a community and into its sewer system. Industrial wastes include the acids, chemicals, and animal and vegetable matter that are produced by the paper, steel, meat-processing, and other industries. Agricultural wastes include silt from erosion, fertilizers, pesticides, and runoff from feedlots. Water used to cool nuclear and other power plants can cause still another kind of pollution—thermal pollution.

First responsibility for implementing and enforcing water quality standards rests with the States. But once approved by the Secretary of the Interior, the standards become Federal standards and are subject, if necessary, to Federal enforcement.

Determining and maintaining water quality appropriate for its many uses is a necessary part of an effective water quality management program. It is important to identify the various causes of water pollution, develop agreements for desired water uses, determine the specific pollution control measures needed, and set up timetables for carrying them out.

Jointly, Federal-State efforts are developing a variety of ways which will



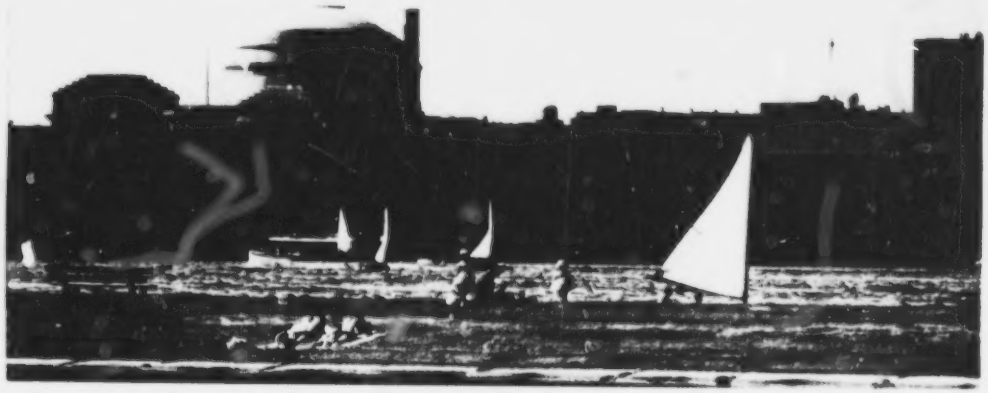


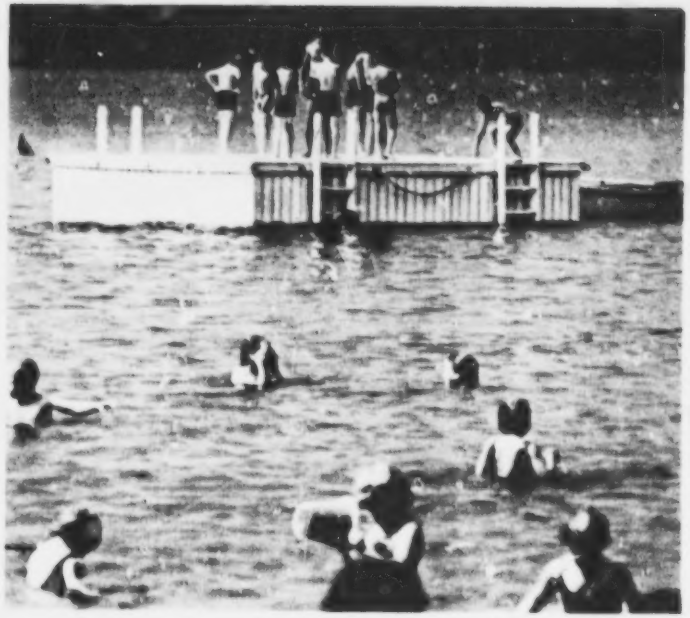
enable them to monitor the performance and results of water quality management activities. These techniques range from checking on construction schedules to monitoring water quality at various points.

The Federal Government and the States maintain monitoring systems to keep track of changes in the quality of many interstate streams, and these systems are being expanded. Some water quality data are collected electronically, some through laboratory tests of water samples.

Implementation plans will also usually involve specific timetables for construction of waste treatment facilities. Construction of required municipal waste treatment works will involve Federal grants and, in many cases, State grants as well. This enables both the Federal and State governments to keep track of construction progress.

The establishment of water quality standards together with an action program of water quality management does not mean that the murky waters of America will suddenly become clean. But the program represents a decisive breakthrough in speeding water pollution control toward its ultimate goal—enhancement of the quality and value of this Nation's water resources.





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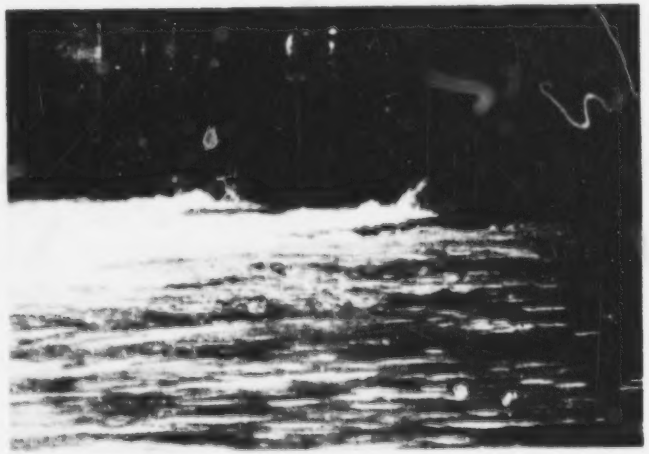
clean water through

STATE LINES and other geographical boundaries are no barriers to the flow and spread of polluted water. Pollution from sources in one locality or one State can—and often does—affect people living in another.

Recognizing that such situations can create many complications and inequities, Congress from the very first water pollution control legislation in 1948 set up procedures under which the Federal Government can take enforcement action.



Over the years, the Federal enforcement authority has been expanded and strengthened.

Today, the Federal Water Pollution Control Act authorizes the Secretary of the Interior to institute an enforcement action when: (1) the water quaiity standards adopted for interstate and coastal waters are violated; (2) the health and welfare of persons in a State other than the one in which the pollution originated are endangered; (3) the pollution causes damage to the health and welfare of persons within the State in which it originates, and the Governor of that State requests such action; (4) pollution has damaged shellfish so that substantial economic injury has resulted from the inability to market shellfish products in interstate commerce; and (5) international pollution is involved.

The steps in an enforcement action, very briefly, may involve: (1) a conference of Federal and State representatives;

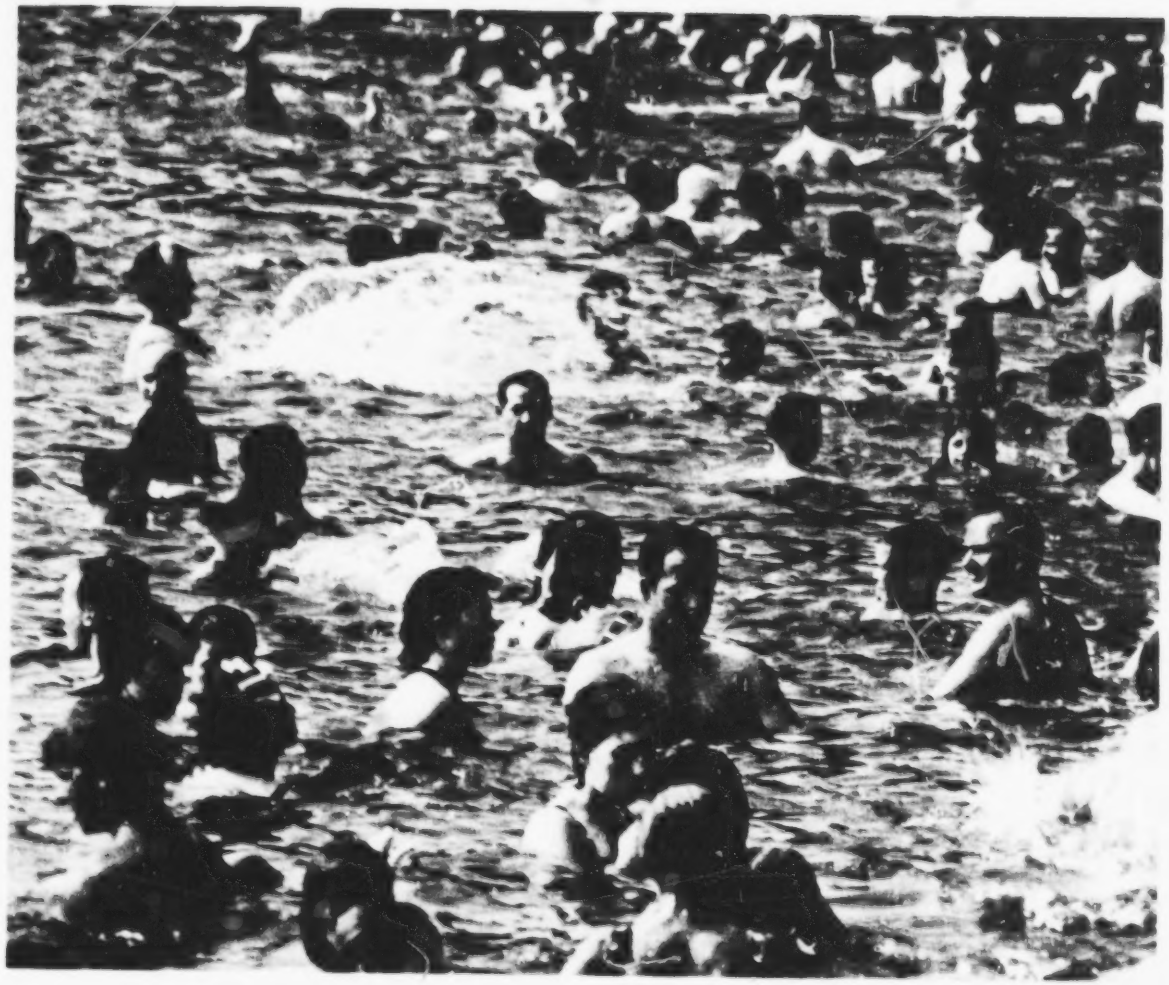
(2) a public hearing if there is no compliance with the conference recommendations; and (3) court action if adequate progress is not made on the hearing recommendations.

The emphasis in an enforcement action is, of course, on the first stage—the conference. The Federal Water Pollution Control Administration believes that cases are settled at the conference table more rapidly, more amicably, and with more promise of permanent improvement in the

treatment of the Nation's water resources than through court action.

The water quality standards program provides a new weapon for preventive action. Where any discharge of wastes reduces the quality of water below the standards set, the Secretary of the Interior is empowered to take enforcement action. He may request the Attorney General of the United States to bring suit. However, 180 days before initiating a court action, the Secretary must notify the alleged violators, as well as other interested parties, such as State agencies, of the violation of the standards. This is to allow time to obtain voluntary compliance by the polluters.

Other activities are designed to encourage enactment of improved and uniform State water pollution control laws and interstate cooperation, including the formulation of interstate compacts for the prevention and control of water pollution.



the search for new answers

THE PROBLEMS of water pollution are so complex, so varied, and so numerous that existing weapons are not adequate to deal with all of them. They have multiplied faster than solutions. This poses a serious threat to the full success of efforts to make America's waters clean and usable and to keep them that way.

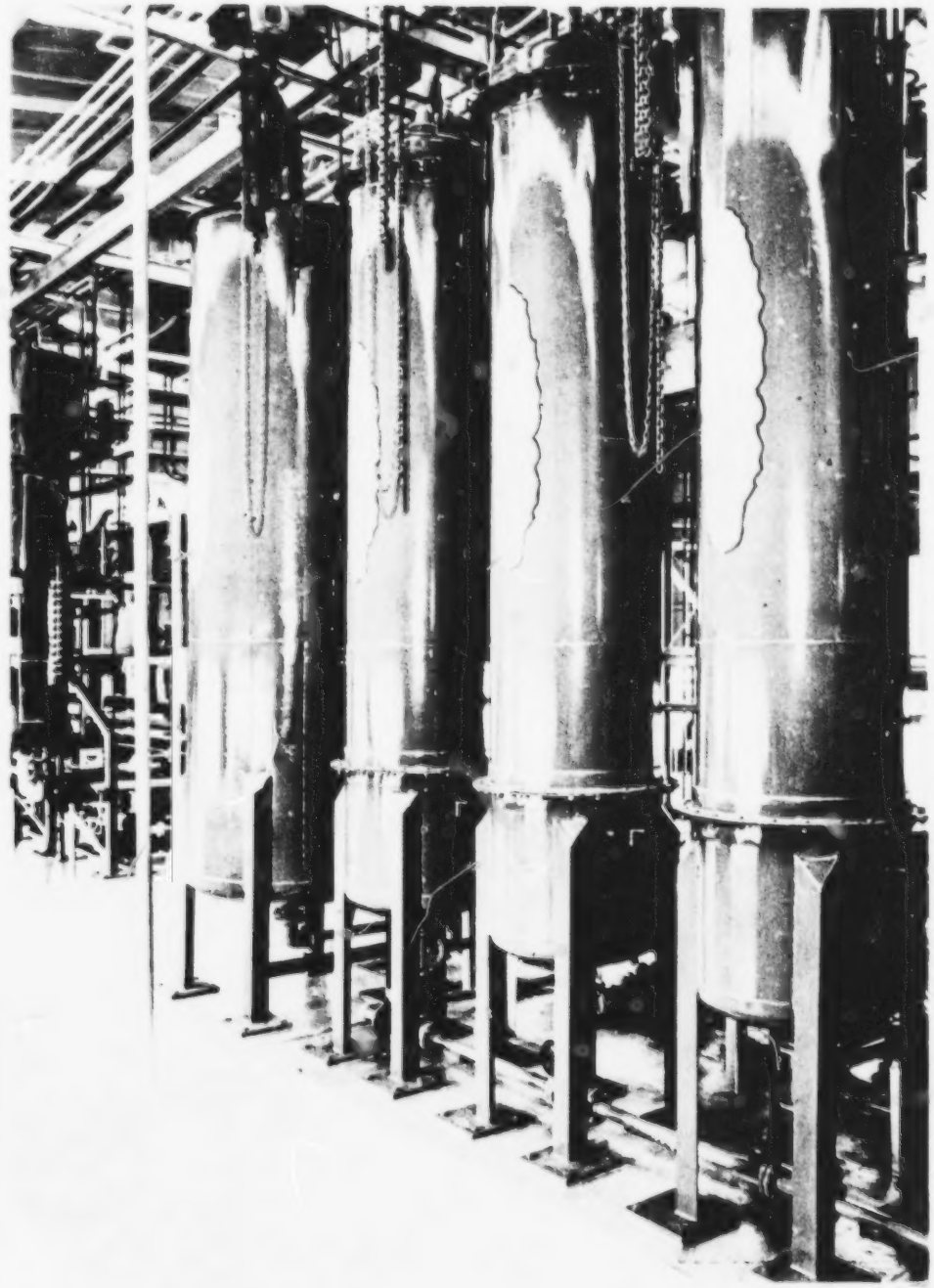
As in medicine or industry or agriculture, the needed answers, the new tools must come from scientific research. Recognizing this, industry, government and private institutions have intensified their research programs.

Congress acted to speed up and broaden the search for more effective and cheaper ways to control and prevent water pollution in the Water Quality Act of 1965 and again in the Clean Water Restoration Act of 1966. Responding to the legislative mandates, the Federal Water Pollution Control Administration's research efforts now run the gamut of scientific investigation and technological development — from basic research through applied research, pilot plants, field evaluation, and demonstration.

FWPCA's research activities are carried on in two ways—directly, through work in its own laboratories and research contracts, and indirectly, through sizable grants for research in colleges, universities, and other public and private institutions and agencies. Specific research projects are being pursued by industrial firms under contract with the Federal Government.

Research alone does not eliminate pollution, however. New findings must be shown to have practical application. Moving research findings more rapidly from the laboratory to practical applications is being carried out through a program of demonstration and pilot projects. Many such projects are now underway or planned, including demonstrations of wastewater renovation and reuse, acid mine-drainage control, improved industrial waste processes, and control or treatment of overflows from combined sanitary and storm sewers.

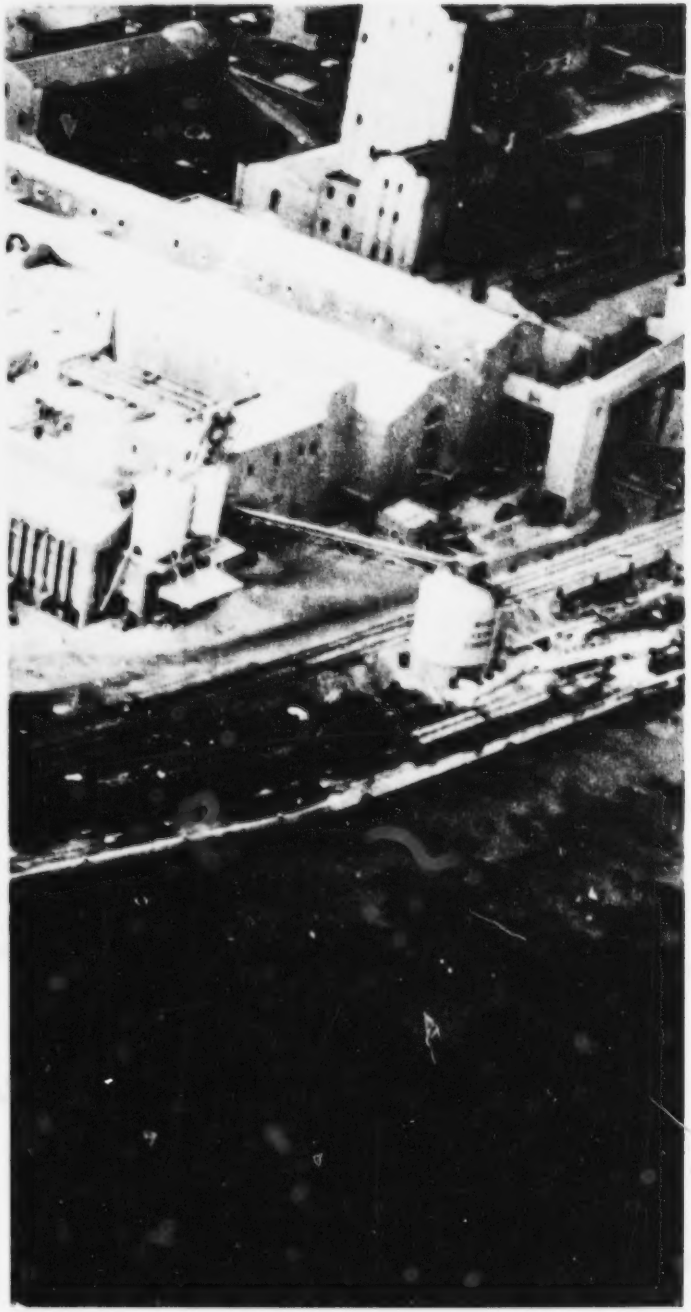
Advanced waste treatment is perhaps one of the most dramatic examples of the full-scale demonstration of new treat-



ment techniques. A breakthrough in this area will mean the development of effective, safe, and economical wastewater systems, which, in effect, will amount to the same thing as creating a new water supply.

All in all, the quest for new approaches in the long-range problem of water pollution control has only scratched the surface. For a long time to come, America's scientific resources will be tapped for more knowledge, new tools to cope with increased pollution and new kinds of pollution.

Tomorrow's research will offer new horizons for action. New technology will make existing control methods more effective. Greater emphasis will be placed on the renovation and reuse of wastewater —wastewater need not be wasted water. New methods will make it possible to capture and remove pollutants from both lakes and flowing streams. In short, America is building up an arsenal of practical weapons to control and prevent pollution from all sources and to clean up already degraded waters.

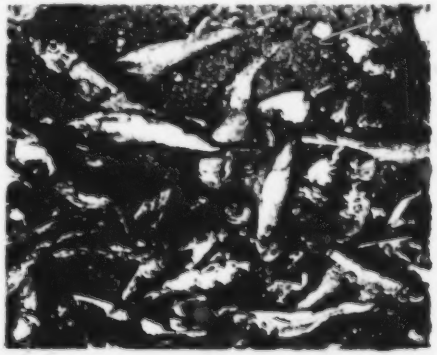


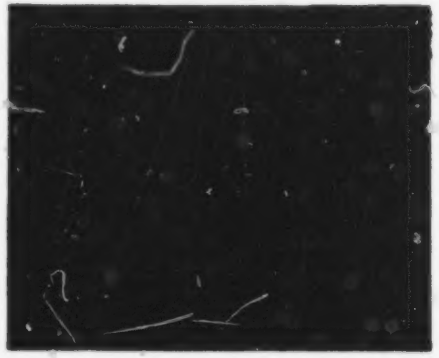
DETERMINING the most efficient technical means available for dealing with the more difficult pollution problems is a continuing need. Developing the trained manpower required for all levels of work in pollution control is another. The Federal Water Pollution Control Administration is active in both areas.

Technical Assistance

Many States have municipal and industrial waste problems of an unusual or complex kind. For help in solving them, they frequently turn to the FWPCA.

These problems do not occur frequently enough in any one State to justify its maintaining the special skills and equipment needed on a permanent basis. However, they arise often enough across the country to warrant attention at the national level. And the experience gained in solving pollution problems in one part of the country can be useful in dealing with similar problems elsewhere. Thus, the Federal program is prepared to give continuing help to States and interstate





and local agencies in planning and carrying out remedial programs.

Technical assistance covers a wide range of activities—from short-term consultation on specific problems to assistance in conducting comprehensive investigations and surveys. Technical experts from FWPCA's regional offices and field laboratory and research facilities throughout the country play dual roles—as "trouble shooters" in dealing with particular problems and as consultants on short-range control measures.

Training

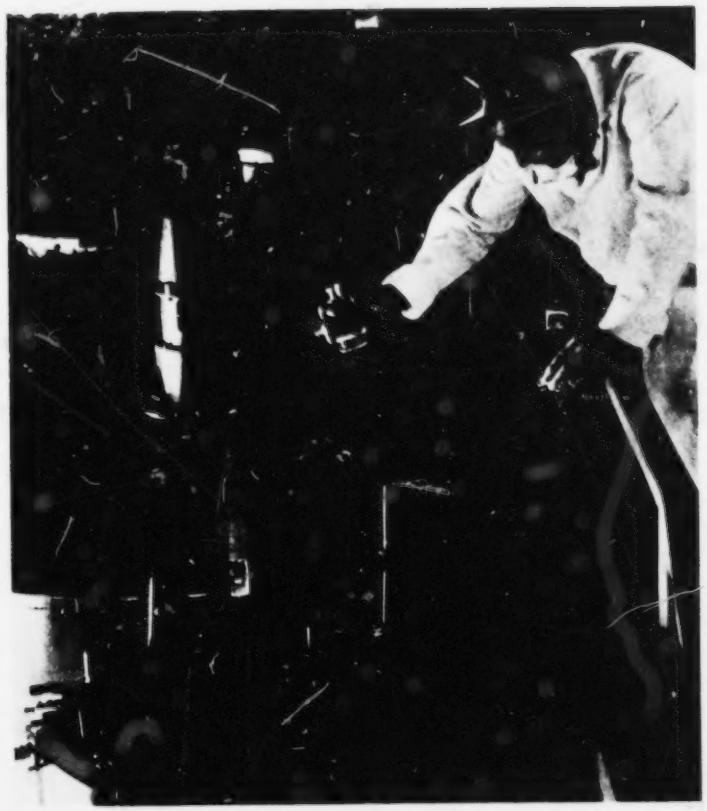
Money, additional facilities, and new equipment have little value without the skilled manpower to plan and operate a pollution control program.

The Federal Government is helping to build up the ranks of competent personnel not only for its own activities but also to assist State and local agencies. This is being done by sponsoring graduate-level training programs, awarding fellowships to individual trainees, conducting short-term training courses for persons already working in the water pollution field, and assisting in the development of expanded and improved training programs for sewage treatment plant operators. Training is also provided through seminars and conferences and through the distribution of written material on special subjects of major interest.

A key approach to bolstering the supply of specialists trained for water pollution control work is to give Federal grants to universities and other academic institutions to support graduate-level training programs. In addition, many individuals are receiving fellowships to help them meet the expenses of advanced training in the field of water pollution control.

Short-term training courses aimed at keeping personnel abreast of advances in pollution control technology are given at several of FWPCA's laboratories.

More effective treatment plant operation to match the projected construction of additional treatment facilities is the goal of the training given to sewage treatment plant operators—key members of the total water pollution control team.



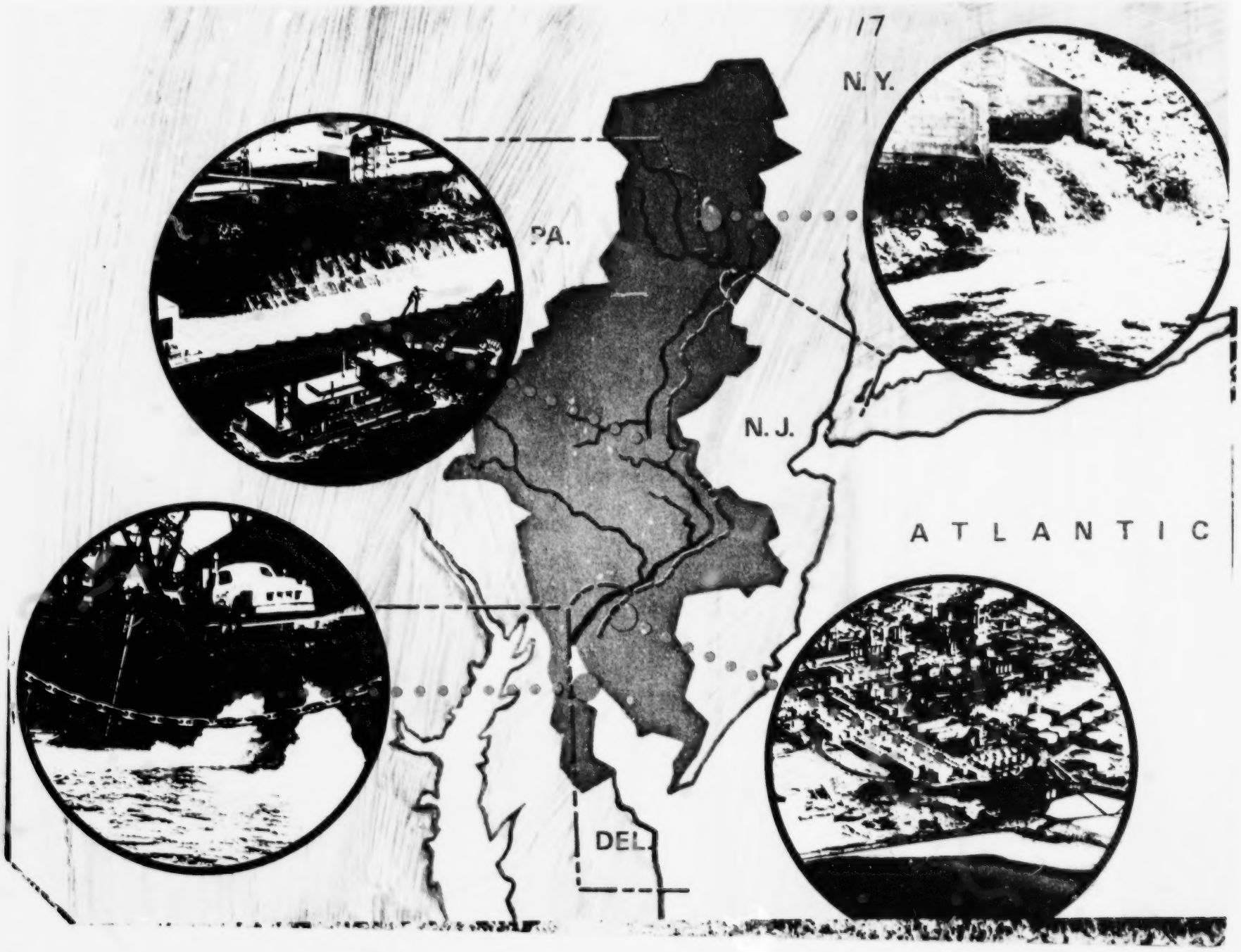
comprehensive planning for river basins

THE SAME WATER flowing in many rivers must serve many States and municipalities. And it must also serve many uses. Pollution control therefore can be truly effective only if it covers all points along the entire system, and only if the efforts—upstream and downstream—are coordinated.

This means that the entire problem of eliminating or reducing the pollution in an area must be attacked on a partnership basis, not as isolated, individual projects. It means, too, that solutions must be tailored to the needs of entire river basins, not just separate localities along the river. These tasks call for comprehensive, all-inclusive planning, taking into account the physical, social, and economic make-up of the whole region or basin.

Comprehensive programming makes it possible (1) to develop basinwide programs, (2) to provide technical guidance to basin planning agencies, and (3) to relate State-local planning efforts to Federal planning. This approach spurs the creation of mutually supporting plans, and links the actions of Federal, interstate, State, and municipal agencies and industry. It provides a blueprint for building water quality management into each river basin system. And it serves as a springboard for enlightened actions by citizens' groups.

Basinwide planning and action is an important aspect of the Federal water pollution control program. To encourage basinwide action by State, interstate, and local agencies, the Federal Water Pollution Control Administration has launched comprehensive pollution control projects in more than half of the country's 20 major river basins. Similar projects for the rest of the river basins will be started in the near future.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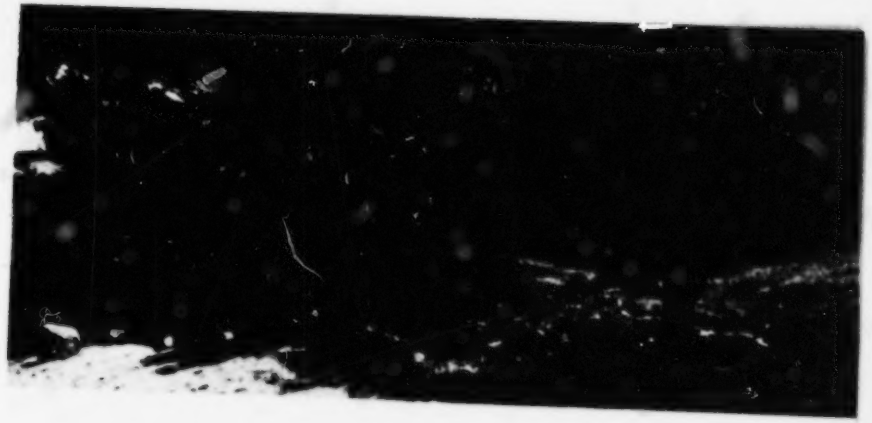


helping the state programs

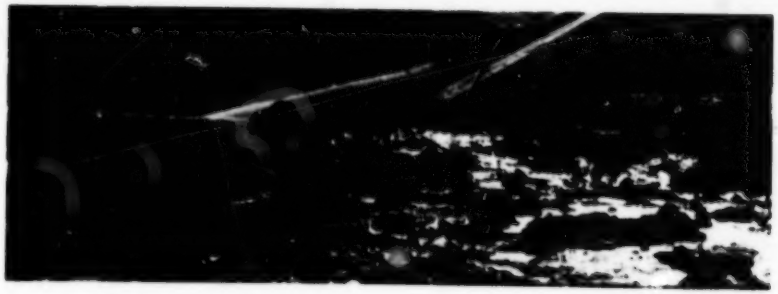
FROM THE VERY START of the water pollution control program, Congress has made it quite clear that the responsibility for preventing and controlling water pollution rests mainly with the States. And although the Federal Government has been given a greater hand in dealing with the problem, the States will have to continue to bear the major share of the responsibility.

To handle their job adequately, the States need money and manpower. Enormous pollution problems have been thrust on the States in recent decades by the Nation's rapid population and industrial growth. Many States were able to expand their programs to meet these growing problems. Others, however, have not had adequate laws and resources to do the job.

Federal program grants are available to States and interstate agencies to help them bear the costs of needed preventive and control measures. These grants are intended as realistic incentives for the States to spend more money to expand and improve their water pollution control programs. Annual appropriations of $10 million are authorized for this purpose for the period 1968-1971. Allocations are made on the basis of population, extent of the pollution problem, and the financial need of the States.

States and interstate agencies have used program grants effectively for employing needed technical persons, for purchasing special laboratory and field equipment, and, in some cases, to initiate research. The grant funds have also been put to work for more pollution surveys, expanded research programs, accelerated public information activities, and more aggressive enforcement of State laws.

From a long-range viewpoint, program grants are perhaps the most effective tool in use to foster and expand the role of the States in the drive to clean up the country's waters. National pollution control can move ahead only as fast as the State and interstate agencies respond to the challenge—and to the opportunity.



special studies

IN THE CLEAN WATER RESTORATION ACT of 1966, the Congress authorized special studies of the following: Estuarine pollution, manpower and training needs, national costs of pollution control, watercraft pollution, and financial incentives to industry. Studies such as these, some of which have already been completed, are making it possible for FWPCA to accumulate a substantial fund of information on the impact of water pollution on the Nation's natural and economic resources.

Estuarine pollution

Estuaries are among the Nation's most valuable water resources, but many are being ruined by wastes dumped into them by polluted rivers. The estuarine study is concerned with the effects of population trends, mineral resource and fossil fuel exploitation, navigation, flood control, erosion control, and other activities on the quality of estuarine waters. A report, which is scheduled to be submitted to Congress by November 1969, will: (1) document and analyze various aspects of estuarine pollution; (2) make recommendations for a comprehensive national program for the preservation, use, and development of estuaries; and (3) recommend the respective roles of Federal, State, and local governments and public and private interests.

Watercraft pollution

This study investigated the extent of pollution of all navigable waters from litter and sewage discharged by watercraft and the methods of reducing pollution from this source. A report was submitted to the Congress as a basis for a legislative program to control vessel pollution.

Cost estimate and study

This study was made to get a clearer picture of how much it will cost to meet all of the pollution control requirements for municipalities, industry, and other entities. Completed and submitted to Congress, the study estimates that expenditures of approximately $26 billion to $29 billion will be needed to collect and adequately treat municipal and industrial wastes discharged into the Nation's waterways in the 5-year period beginning July 1, 1968. These estimates do not cover the additional expenditures which would be necessary to control a wide range of other pollutants, such as acid-mine drainage, discharges from combined sewers, oil and radioactive wastes, and sediments washed into rivers and lakes. A companion study estimates that from July 1, 1969, through June 30, 1973, the Federal cost of carrying out the provisions of the Water Pollution Control Act will amount to more than $3.3 billion, exclusive of construction grants for fiscal years 1972 and 1973.

Manpower evaluation

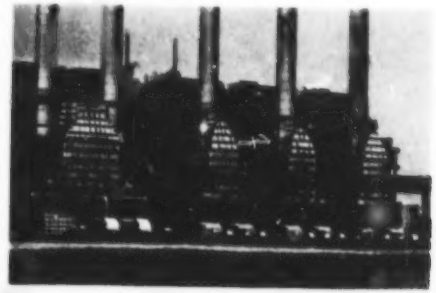
The purpose of this study was to determine the manpower requirements of State and local governments to carry out programs supported by the Federal Water Pollution Control Act, and the ways of using existing Federal training programs to meet the needs. This study has been completed, and a report submitted to the Congress.

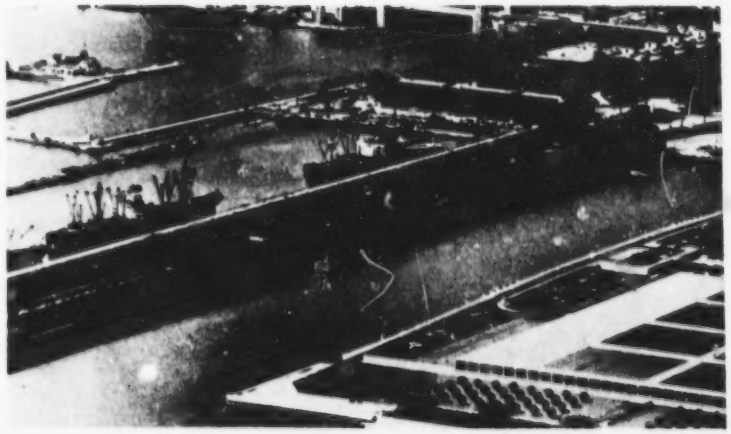
The report identified sub-professional needs as most immediate and critical, and recommended a program of inter-agency cooperation in training to meet those needs. Work on this program is underway.

Incentives for industry

The purpose of this study was to develop methods for providing incentives to assist industry in building water pollution control facilities, including the possible use of tax incentives as well as other methods of financial assistance.

In addition, a special study of oil pollution was ordered by the President following the breakup of the tanker "Torrey Canyon" off the coast of England in March 1967. This study, conducted by the Department of the Interior and the Department of Transportation, became the blueprint for a legislative program to give the Federal Government greater authority in dealing with the problem of oil pollution.





conclusion

THE WATER QUALITY ACT of 1965 and the Clean Water Restoration Act of 1966 marked the beginning of a major offensive against water pollution in this country. The conquest of pollution will not be easy.

There are, however, many encouraging signs of progress. At the Federal level, more effective programs are underway in research, in construction, in water quality surveillance, in the development of comprehensive river basin planning, in controlling pollution from Federal installations and activities, and, most recently, in the development of water quality standards for interstate and coastal waters.

State and local governments are showing a new attitude toward pollution. Stricter pollution control laws, construction of new waste treatment facilities, interstate compacts for joint action—all are indicative of the strong surge of interest being shown by States and local governments in water conservation.

Industry, business, and agriculture, too, have stopped taking water for granted. They are becoming increasingly responsive to the problems with an eye to reducing wastewater—searching for ways to turn waste products into useful materials.

But there are still major gaps in State and community control efforts, in the activities of industry, and in public recognition that pollution control is not just the other fellow's problem.

A remaining obstacle is the large backlog of needed municipal and industrial waste treatment works. And there is still a need for new and improved technological tools to solve existing problems, let alone to keep abreast of new problems that are emerging.

The Federal Government now has two

decades of experience in developing a water pollution control program. In the face of a formidable task, it is clear that a new era of enlightenment, a new era in pollution control is beginning. All segments of our society have the opportunity —and the obligation—to actively share the responsibility.

We have much of the technological capability for the task. We have very real economic and social incentives. And we have the governmental machinery through which we can get at the problem. From here on, it is a question of cooperation, money, and hard work.

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IMPORTANT DATES IN THE DEVELOPMENT OF THE CLEAN WATER PROGRAM

1899 Rivers and Harbors Act. Prohibited discharge or deposit into any navigable waters of any refuse except that which flowed from streets and sewers in a liquid state.

1912 Public Health Service Act. Authorized surveys and studies of water pollution, particularly as it affected human health.

1924 Oil Pollution Act. Prohibited oil discharges into coastal waters damaging to aquatic life, harbors and docks, and recreational facilities.

1948 First Federal Water Pollution Control Act with a five-year expiration date.

1953 Federal Water Pollution Control Act extended for three years.

1956 First permanent Federal Water Pollution Control Act. Extended and strengthened the 1948 law in areas of enforcement and research and initiated grants for construction of waste treatment works.

1961 Federal Water Pollution Control Act amended. Further strengthened enforcement authority and increased support for construction of municipal waste treatment works and research.

1965 Water Quality Act, further amending the Federal Water Pollution Control Act. Established a Federal Water Pollution Control Administration in Department of Health, Education, and Welfare. Required establishment of water quality standards for all interstate and coastal waters.

1966 Federal Water Pollution Control Administration transferred to Department of the Interior under President's Reorganization Plan No. 2.

Clean Water Restoration Act, further amending Federal Water Pollution Control Act. Greatly increased authorizations for grants to help build sewage treatment plants, for research, and for grants to State water pollution control programs. Transferred administration of the Oil Pollution Act from the Secretary of the Army to the Secretary of the Interior.

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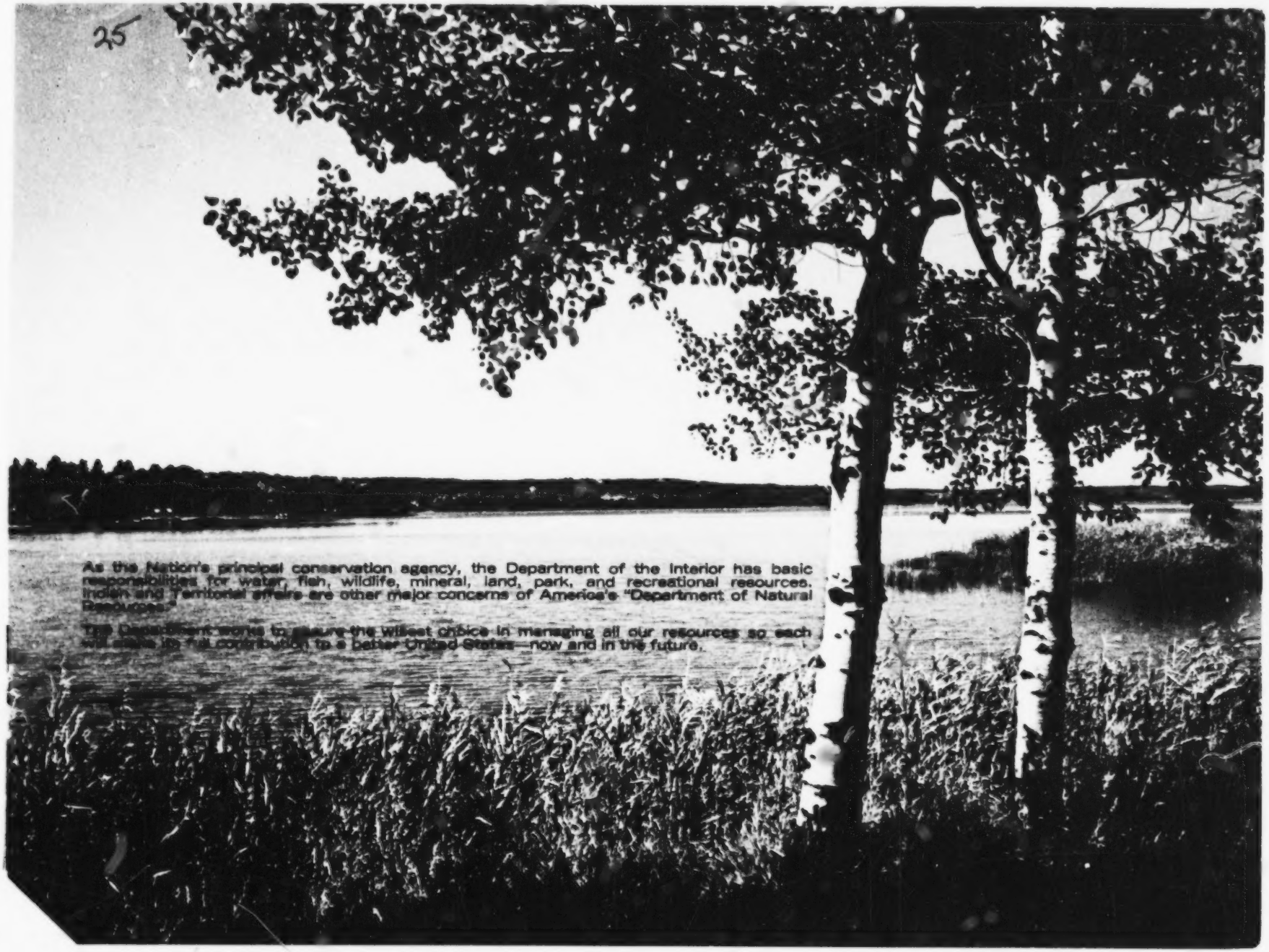

As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities for water, fish, wildlife, mineral, land, park, and recreational resources. Indian and Territorial affairs are other major concerns of America's "Department of Natural Resources."

The Department works to assure the wisest choice in managing all our resources so each will make its full contribution to a better United States—now and in the future.

FEDERAL WATER POLLUTION CONTROL ADMINISTRATION ● U. S. DEPARTMENT OF THE INTERIOR

Photo by THOMAS E. MAHNKEN

CWA-11 October 1968